

**JSA Number:** Yerington -028

**Task:** Pit Lake Transducer Installation

<b>JSA NUMBER:</b> Yerington-028 (Rev.0) <b>DATE:</b> 09/05/2007	<b>Company Performing the Job:</b> Brown and Caldwell	<b>PROJECT MANAGER:</b> Chuck Zimmerman <b>SITE SAFETY OFFICER:</b> Penny Bassett
<b>JOB TITLE OR TASK:</b> Pit Lake Transducer installation	<b>TITLE OF PERSON(S) WHO PERFORMS JOB:</b> Field Technician, Geologist	<b>ANALYSIS BY:</b> Penny Bassett <b>REVIEWED BY:</b>
<b>WORK LOCATION:</b> Yerington Mine Site	<b>PHYSICAL DESCRIPTION OF WORK AREA:</b> Sloping ground (~7-10% grade) of pit haul road leading into pit lake water body.	<b>REASON FOR ACTIVITY:</b> Install pressure transducers to measure lake water level
<b>REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE) AND/OR PERTINENT JOB SAFETY FORMS:</b> <i>Minimum PPE:</i> Hard hat, safety glasses, steel-toed boots, high-visibility shirt or vest, long-sleeved shirt. <i>Additional PPE (as needed):</i> Leather gloves, nitrile gloves, rubber boots, floatation vest. <i>Job Safety Form:</i> BP Authorization to Work (ATW) <i>Other:</i> This is a two person task when working next to the pit lake (open body of water)		
SEQUENCE OF BASIC JOB STEPS	POTENTIAL HAZARDS	PREVENTIVE OR CORRECTIVE ACTION
1. Drive to location in pit. <ul style="list-style-type: none"><li>Drive down main haul road ramp on north east side of pit</li></ul>	1. Obstructions in road from fallen rocks.  2. Overhead hazard of debris and rocks falling from pit wall.  3. Parking on sloped terrain may cause vehicle to be unstable or move.	1. Drive slowly, observe roadway and steer around rocks; move rocks out of road if necessary.  2. Wear hardhat at all times; avoid working close to highwall if possible; examine highwall from a distance before walking underneath it, look for any loose rock and dust from crumbling rock as an indicator of potential rock fall.  3. Park across the road to minimize slope of vehicle; use parking brake and wheel chocks if slope warrants.
2. Install mounting post for datalogger, ~75-100 ft away from water and mount datalogger on post. <ul style="list-style-type: none"><li>Dig a hole ~2 ft deep using jackhammer or posthole digger.</li><li>Place fence post or pipe in hole and pour concrete around to secure in place.</li><li>Mount datalogger on post (mounting bracket drilled and attached to post) using electric drill.</li></ul>	1. Loud noise and flying debris during hole digging with jackhammer.  2. Heavy or awkward lifting of jackhammer, generator, or mixing concrete could cause back injury.  3. Pinched fingers or other body injury handling posthole digger or post driver.  4. Overhead hazard of debris and falling rocks, especially when using jackhammer.	1. Wear hearing protection and safety glasses.  2. Use proper lifting techniques and get assistance as needed.  3. Wear leather gloves when handling tools; be aware of body position.  4. Do not work directly under highwall if possible; bar down any loose rocks if possible; assign one person as spotter to observe highwall during jackhammer operation.

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3. Install conduit for data cables from data logger to pressure transducer. <ul style="list-style-type: none"><li>String data cable through conduit pieces and connect pieces together.</li><li>Secure conduit to ground using wire staples</li></ul>	1. Fumes from PVC glue if glue is used. 2. Hazard to hands by striking if hammer used to pound wire staples into ground.	1. Conduct work in open air with good ventilation. 2. Wear leather gloves; be aware of body and hand position
4. Install pressure transducer beneath current water level in pit lake. <ul style="list-style-type: none"><li>Place transducer in conduit and push out to desired depth in lake.</li></ul>	1. Working near water edge creates a potential drowning hazard.	1. Do not approach water unless a second person is nearby (use the buddy system); have water rescue kit with floatation vests and rescue throw ring nearby; do not enter water.
5. Survey current water level and elevation markers <ul style="list-style-type: none"><li>Survey crew must find reference survey point and then survey a point at the rim of the pit where they can see down into pit in the area where the transducer has been installed.</li><li>Survey current lake elevation.</li><li>Survey and install elevation markers on ramp between lake and datalogger.</li></ul>	1. Falling hazard while working near pit edge.	1. Set up survey station as far from pit edge as possible while still allowing visibility into pit; examine ground surface for evidence of tension cracks that could indicate potential slope failure and avoid these areas; set up safety cones and tape just beyond survey station to restrict access and prevent accidental crossing into hazard area.
6. General activities	1. Uneven working surface can create a tripping hazard  2. Weather conditions can create heat or cold stress situations. 3. Biological hazards, such as spiders, insects, snakes or other animals, can be found at the Site any time during the spring, summer and fall seasons. Workers may receive potential bites and stings resulting in allergic reactions.	1. Be aware of the ground surface to avoid tripping hazards; avoid unnecessarily hazardous terrain and steep slopes by altering course as needed. 2. Dress appropriately for the weather conditions. Monitor your self for the signs of heat stress/exhaustion or frost bite. 3. Workers should wear leather gloves when reaching into areas of potential spider habitat, such as shady protected areas; wear long-sleeve shirts to minimize contact with insects.